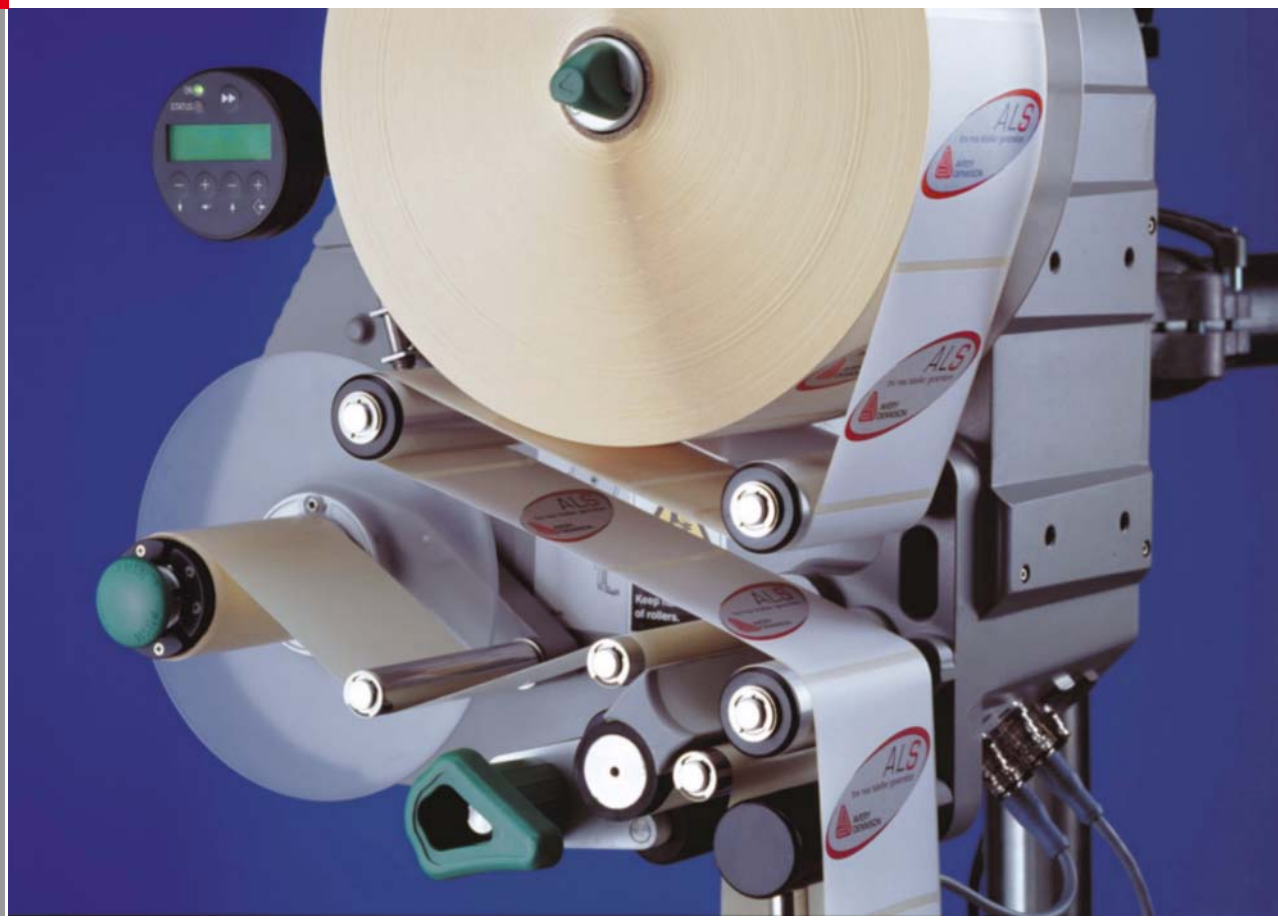
User Manual

Label Dispenser



ALS 104

Edition 5 4/2010

AVERY DENNISON
Link information to your product

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1 PLEASE NOTE

1.1 GENERAL NOTES

1
1.1

1.1.1 Validity and binding effect of this manual

Contents

This technical manual refers exclusively to the ALS 104 Label Dispenser. It is written for the purpose of ensuring professional usage and calibration of the unit.

Prerequisites for the use and adjustment are the professional installation and configuration of the unit.

For any technical questions you may have that are not described in this manual, see:
➔ The service manual of the label dispenser
or
➔ Request a technician from one of our sales partners.
– Our sales representatives are available to assist you, particularly with configuring the unit as well as in the case of malfunctions.

Technical status

Technical status: 10/2008

Software version: 3.21 (front end), 1.84 R01 (drive)

Avery Dennison reserves the right:
– To make modifications to construction parts, components and software, as well as to employ comparable components in place of the parts specified, in keeping with technical advances.
– To modify information in this document.
No commitment will be made to expand these modifications to include any units delivered earlier.

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1.1.2 Illustrations and descriptions

Signs and symbols

Various information types are indicated in different ways within the document in order to simplify readability and comprehension.

Sentences starting with an arrow are instructions and guidelines.

➔ Perform the instructions one after another in the specified order.

The following information begins with a dash:

– Lists
– Mode descriptions
– Descriptions of prior steps
– Prerequisites for following actions

Dangers and risk notes

Important directions that you must absolutely observe are particularly emphasized:

WARNING!

A warning refers to risks that can lead to serious injury or death! The warning contains safety measures to protect the relevant persons.

➔ Always follow the instructions.

CAUTION!

A caution indicates risks that can lead to property damage or injuries to persons (minor injuries). The caution note contains instructions for preventing damages.

➔ Always follow the instructions.

Figures

Texts are accompanied by figures where necessary. Figures are indicated using figure numbers in [square brackets]. A capital letter after a figure number, for example [12A], refers to a specific section of the figure. Generally, the label dispenser shown is an ALS 104 right-handed version. The left-handed version is only shown where it is necessary to differentiate between the two.

Button symbols

– The buttons of the control panel are depicted as symbols.
– The symbols are depicted with a '+' (PLUS SIGN) between them if more than one button is to be pressed. ↓ + ◇→

Functions

Functions are displayed in grey in the text with the following structure, MENU NAME > Function name.

Supplementary information

EXPERTS

The expert symbol indicates actions that are only to be performed by qualified and specially trained personnel.

The information symbol indicates notes and recommendations, as well as additional information.

Equipment:

– Equipment, for example lubricants or cleaning agents

1.2 SAFETY INSTRUCTIONS

1.2

1.2.1 Information and qualifications

Follow the instructions

WARNING!

Safe and efficient operation of the label dispenser can only be guaranteed if you observe all necessary information.

Product liability and warranty claims can only be asserted if the unit was operated in accordance with the directions in the manual.

- ➔ **Before operating the unit, read the operating instructions and all other notes carefully.**
- ➔ **Observe the additional safety and warning notes on the label dispenser.**
- ➔ **Only permit competent people to operate and configure the label dispenser.**

Keep the product information at hand

With respect to this manual:

- ➔ It should be kept at the location where the unit is installed and be available to the operator.
- ➔ It should always be legible.
- ➔ If the unit is sold, the manual should be made available to the new owner.

- ➔ The safety and warning notes affixed to the unit itself must be kept clean and legible. Missing or damaged signs must be replaced.

Ensure the required qualifications are met

- ➔ Ensure that only trained and authorized personnel operate, configure and service the unit.
- ➔ Only allow qualified and well-trained expert personnel or service technicians to perform configurations.
- ➔ The responsibilities with regard to operation, configuration and maintenance should be clearly defined and consistently maintained.

- ➔ In addition, personnel should also be instructed on a regular basis in matters of occupational safety and environmental protection.

Qualification for operation

The instruction of personnel using the unit must ensure that:

- The operating personnel can use the unit on their own and safely.
- The operating personnel can remedy small operational disruptions on their own.

- ➔ At least two people must be instructed in the unit's usage.
- ➔ Enough label material must be provided for testing and instructional purposes.

Qualifications for configuring

The configuration of the controls requires qualified expertise:

- Personnel configuring the unit must be acquainted with the functionality of the label dispenser.
- Personnel configuring the unit must be acquainted with the modes of operation within the facility in which the label dispenser is integrated.
- The personnel configuring the unit must be able to use the additional menus properly and appropriately for specific project requirements.

1.2 SAFETY INSTRUCTIONS

1.2.2 Operational safety of the unit

Proper usage

The ALS 104 Label Dispenser is a fully automatic unit for attaching self-adhesive labels to products or packaging. The company operating the unit must install it with suitable equipment to protect operating personnel from danger; for example, the danger of the hands or fingers being crushed by reaching in between the product and the dispensing edge.

WARNING!

Improper usage of the unit can cause accidents, property damage and production downtime!

- ➔ **Only use the unit in accordance with the instructions specified in this manual.**
- ➔ **Do not operate the unit without the required safeguards.**
- ➔ **Only configure the unit in accordance with this manual and with the required care.**
- ➔ **Only use original accessories.**
- ➔ **Do not make any modifications or alterations to the unit.**
- ➔ **Repairs to the device may only be performed by authorised specialists who are aware of the risks involved.**

Protection against injuries by electrical current

WARNING!

The machine operates using mains voltage! Touching live electrical parts may expose you to hazardous electrical currents and may lead to burns.

- ➔ **Only operate the unit once the housing has been reassembled properly.**
- ➔ **Only connect the unit to a properly fitted power socket that is grounded.**
- ➔ **Before cleaning, switch off the unit and remove the power cable from the socket.**
- ➔ **Only link the unit to devices that fulfil the SELV (safety extra-low voltage) circuit requirements specified in EN 60950.**

WARNING

The unit is not protected against splashing water in its standard model.

- ➔ **Keep the unit dry.**
- ➔ **If liquids have penetrated the unit, switch it off and disconnect or unplug the power cable immediately. Inform a service technician.**

WARNING

The device is *only* completely disconnected from the mains if the power cable *is unplugged.*

- ➔ **Make sure the power supply socket is accessible.**
- ➔ **In case of emergency, switch off the device and disconnect the power cable.**

CAUTION

A too high or low supply voltage can damage the unit.

- ➔ **Only operate the device using the system voltage indicated on the nameplate.**
- ➔ **Ensure that the mains voltage set on the unit is the same voltage as that provided by the electricity supplier.**

1.2 SAFETY INSTRUCTIONS

Protection against injuries by mechanical action

WARNING!

Risk of injury due to moving and rapidly rotating parts!

- **Long hair, loose jewellery, long sleeves, and so on are not permissible when using the unit.**

➔ **Sufficient protective clothing must be worn.**

➔ **Keep moving parts free from obstructions even when the unit is not switched on, if there is a chance the machine might be turned on.**

➔ **Switch off the machine before making any mechanical settings.**

➔ **Do not wear ties, loose clothing, jewellery, wrist watches or similar items on your person when near the operating unit.**

WARNING!

There is a risk that you may get your fingers or hands crushed on the dispensing edge by products on the conveyor belt!

➔ **Never reach between the product and the dispensing edge while the unit is in operation or ready for operation.**

➔ **Never reach behind the safety guard or remove it while the unit is in operation.**

Protection against injuries by chemicals

CAUTION!

Operating materials such as cleaning agents or the solvents in glues can be damaging to health.

➔ **Always follow the instructions, use and safety regulations specified by the manufacturer!**

1.2.3 Before beginning production

Due diligence of the operating company and the service technician

➔ Ensure that the following prerequisites are fulfilled in accordance with the service instructions:
– The machine is installed properly and configured in accordance with the guidelines.
– All required safety mechanisms have been installed.
– The unit has performed at least one successful test run.
– The unit is connected to the power supply.

➔ The users have the required personal protective equipment, for example, a hairnet. Ensure that the protective equipment is utilised correctly.

Due diligence of the user

➔ Check that the safety installations are working properly.
➔ Inspect the machinery for any visible damage. Report any ascertained defects immediately.
➔ Use the required personal protective equipment correctly, for example, wear a hairnet.
➔ Remove any unnecessary materials and objects from the operating area of the unit.
➔ Ensure that only authorised persons are within the operating range of the machine.
➔ Ensure that starting up the machine will not injure anyone.

1.2.4 Safety notes on the unit

CAUTION!

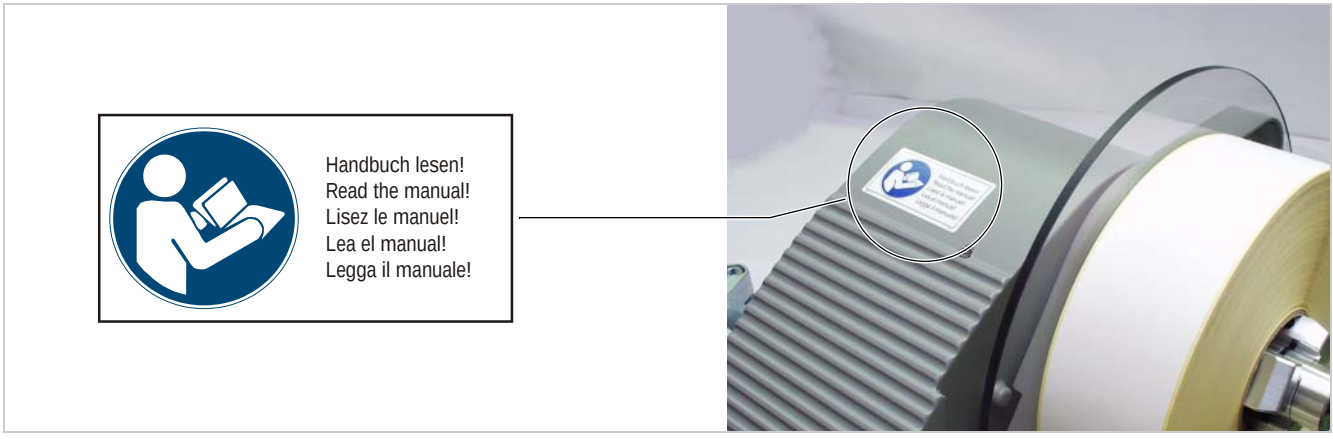
Warning notes on the unit represent important information for the personnel using it.

- ➔ **Do not remove warning notes.**
- ➔ **Replace any missing or illegible warnings.**

The ‘Pinch Point’ warning [1] note warns you of the danger posed by the machine’s rotating parts; they can trap items and draw them in.

[1] Left: ‘Pinch Point’ warning. Right: Position of the warning note on the ALS 104. Item number of the label: A5346.

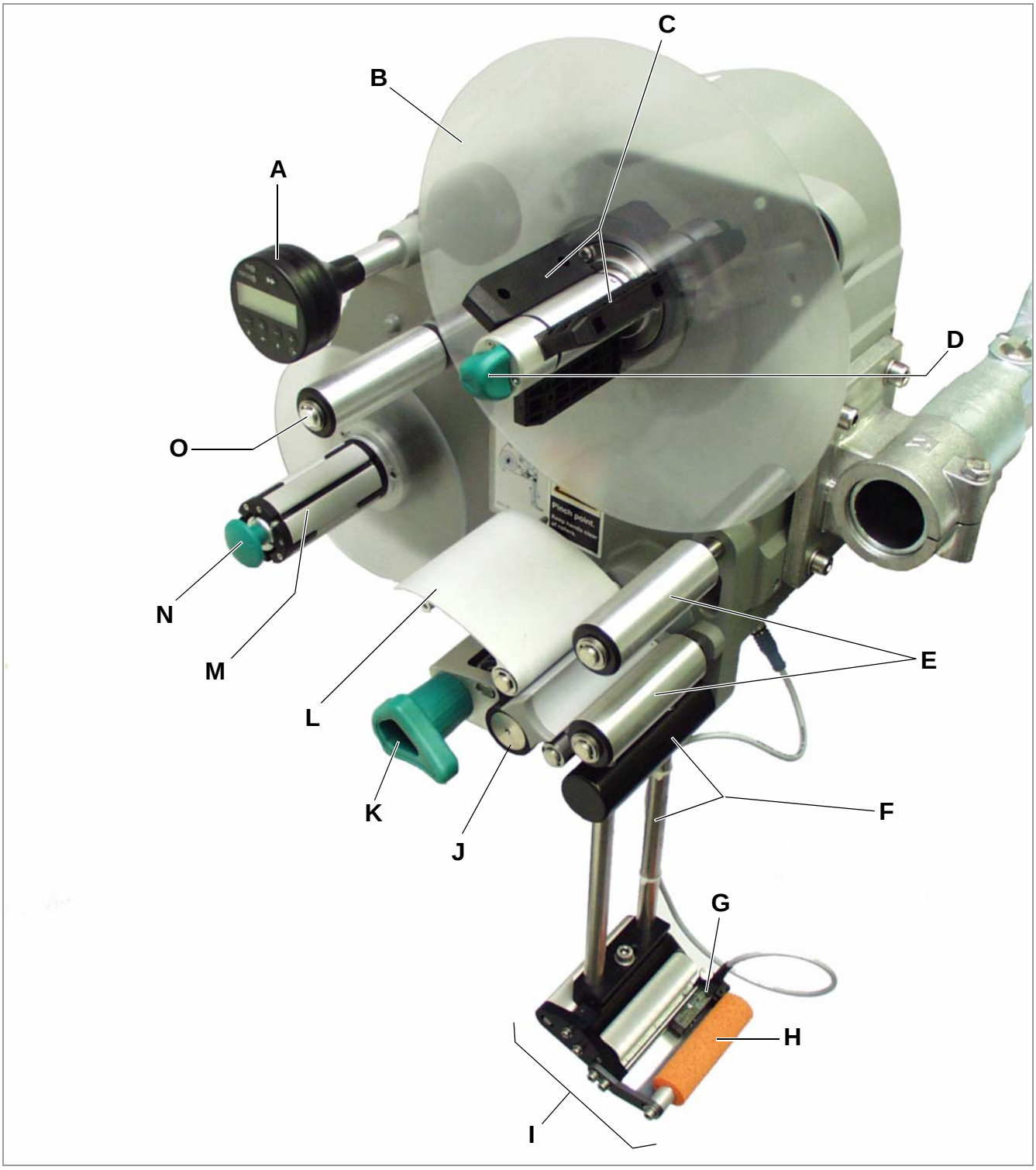
The blue label ‘Read manual’ [2] demands that users read the unit instructions.



[2] Left: ‘Read manual’ notice. Right: Position of the notice on the ALS 104. Item number of the label: A5331.

2.1 OVERVIEW

2.1.1 Components



[3] ALS 104 Label Dispenser (right-handed version)

2 PRODUCT DESCRIPTION

2.1 OVERVIEW

A Control panel
– For sending commands to the device and for displaying operating states and error messages.
– An optional external control panel can also be connected to the device.

B Dispenser
– Dispenser mandrel grasps the label roll.

C Core diameter adapter
– For adjusting the diameter of the dispenser mandrel to match the core diameter of the label roll.

D Adjusting knob
– Turning this in a clockwise direction secures the label roll on the dispenser.

E Deflection rollers

F Dispensing edge bracket

G Label sensor
– Stops the label feed after a label has been dispensed

H Pressure roller
– Prints the label once it is stuck to the product

I Dispensing edge
– Standard: (non-adjustable) L-shaped dispensing edge
– The following options are available: V-shaped dispensing edge, adjustable L-shaped dispensing edge, spring-loaded L-shaped dispensing edge, pneumatic L-shaped dispensing edge

J Drive roller
– Drives the label material forwards

K Pressure mechanism
– Presses the pressure roller against the drive roller
– Prevents the backing paper from slipping through
– Releases automatically once the backing paper has been drawn around the drive roller

L Tensioning plate
– Keeps the backing paper taut

M Rewinder
– Rolls up the used backing paper

N Release button
– Pressing this button reduces the diameter of the rewinder core.
– Allows the easy removal of the rewound backing paper

O Dancer arm
– Keeps the backing paper stretched tight evenly
– Arrests the rotation of the material roll if tension diminishes

2.1 OVERVIEW

2.1.2 Control panel

Operating LED

Lights up green when the device is switched on.

Status LED

LED	Explanation
On	Dispensing mode
Off	Configuration mode
Flashing	Error

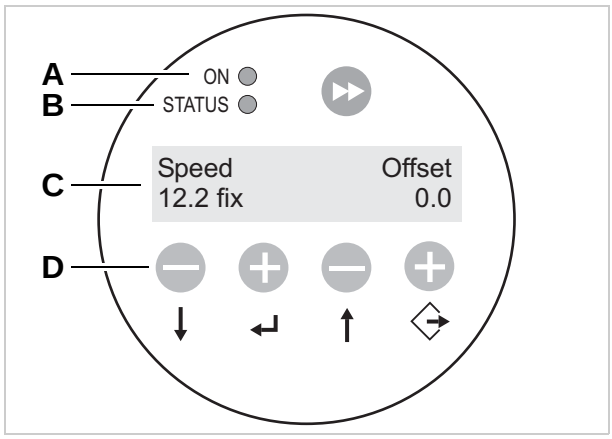
[5] Meaning of the red status LED

LCD display

– Displays functions, configured values, operating states and error messages
– What is displayed at any one time depends on the operating status of the device; these screens are explained in the section “Operating modes” on page 24.

Buttons

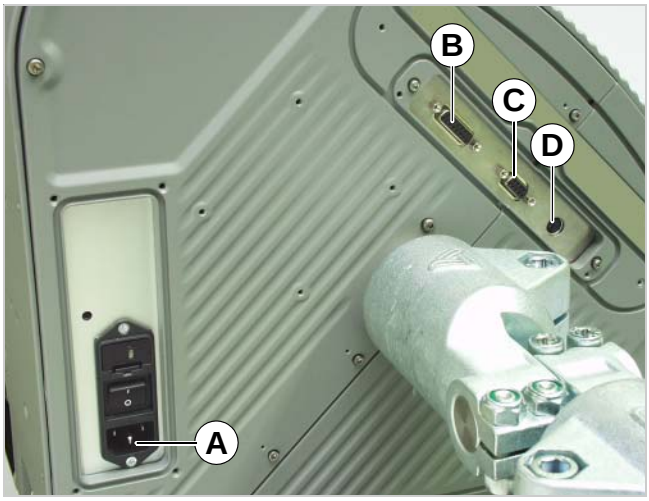
The button assignments depend on the currently active operating mode and are described in the section “Operating modes” on page 24.



[4] Control panel of the ALS 104
A Operating LED
B Status LED
C LCD display
D Buttons

2.1.3 Connection arrangement

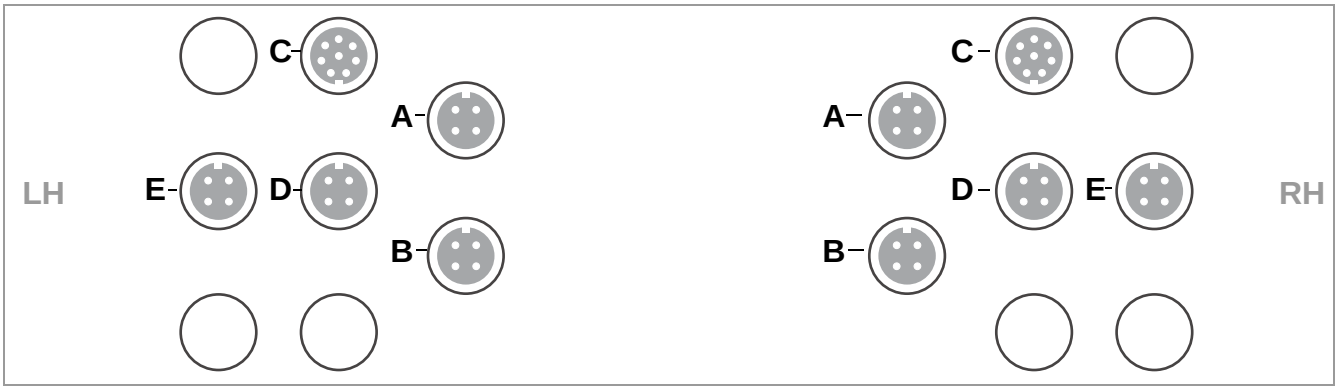
Connections on the back of the device



[6] Connections on the back of the ALS 104:
A Power supply connection
B Signal interface (Sub-D15 port)
C RS232 interface (Sub-D9 port)
D Connection for external control panel (PS/2 port)

Sensor connections

[7] Position of the sensor connections on the ALS 104



[8] Arrangement of the sensor connections (schematic) on the LH (left figure) and RH (right figure) devices.
A Product sensor
B Label sensor
C Optional: Signal outputs
D Speed sensor (required for automatic speed adaption)
E Roll diameter sensor

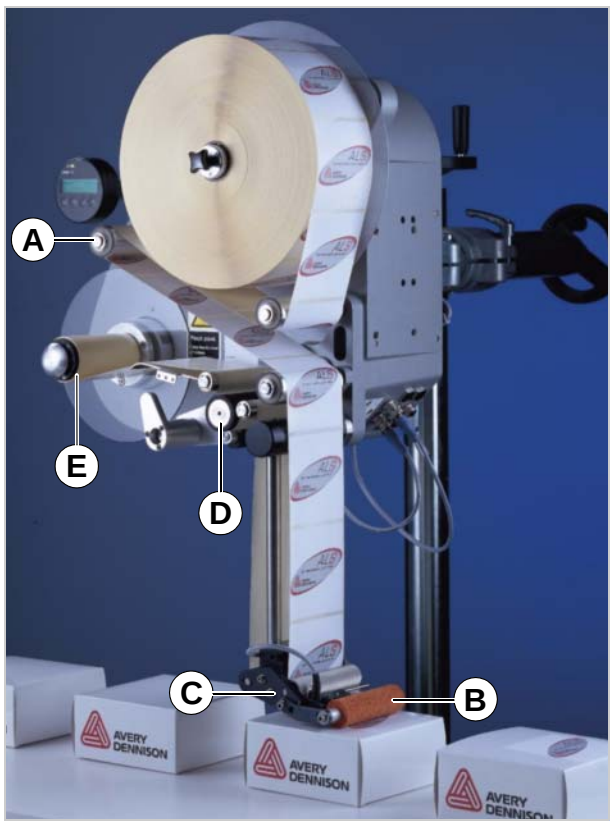
2.1.4 Mode of operation

In labelling mode, the strip is first pulled from the label roll around the dancer arm [9A], which consistently maintains even tension in the label strip. The feed roller [9D] behind the dispensing edge [9C] draws the strip across the dispensing plate. The label is unfixed from the backing paper on the dispensing plate and is pressed onto the product with the pressure roller [9B].

The feed roller drives the label strip forwards the length of one label and stops until the next product arrives at the dispensing plate The feed is started by the product sensor mounted on the conveyor belt. The stop control provided by the label sensor on the dispensing edge ensures the feed is halted as soon as a gap is detected between two labels.

The spent backing paper runs from the dispensing edge around the drive roller [9D], and then over the tensioning plate to be rewound [9E]. The tensioning plate ensures that rewinding is performed evenly.

The entire operation of the label dispenser is controlled and monitored electronically. If errors occur, the device controls output an appropriate notification for the operator. If necessary, the labelling operating mode is halted automatically. An electronic signal is output at the same time. The signal can be fed to an external controller and evaluated.



[9] The ALS 104 is ready for operation in its idle mode.
A Dancer arm
B Pressure roller
C Dispensing edge
D Drive roller
E Rewinder

2.1 OVERVIEW

2.1.5 Technical specifications

Characteristics

Dispensing speed:	up to 30 m/min
Labelling halt precision [1] at the peeling edge:	± 0.5 mm
Speed control:	constant speed or automatic speed adaption using speed sensors

1) At a speed range of 5 to 30 m/min

Labels

Label material:	Converted self-adhesive label material with liner
Internal rewinding	yes
Material width (including backing paper):	10 to 110 mm [2]
Label width:	bis 110 mm [2]
Label length:	5 to 600 mm
Label roll	
Winding direction:	face in or face out
Unwinder (outer) Ø:	up to 300 mm
Rewinder (outer) Ø:	up to 200 mm
Core (inner) Ø:	38.1 / 76.2 / 101.6 mm (1.5 / 3 / 4 ")

2) Depending on the dispensing edge width.

Label sensor

Distance to peel edge	
L-shape dispensing edge:	19 mm
V-shape dispensing edge (fix):	77 mm
V-shape dispensing edge (variable):	79-207 mm
Transmission sensor:	Wenglor OPT242-P800 optical, NPN

Power supply

System voltage:	115 V (AC) at 60 Hz power frequency 230 V (AC) at 50 Hz power frequency
Power consumption:	300 VA
Current consumption:	2 A at 115 V system voltage 1 A at 230 V system voltage

Electronics

Processor:	16 Bit DSP
RAM:	4 kB
ROM:	64 kB
Slot for plug-in-cards:	none
Realtime-clock:	none
Control panel:	graphical display with 128 x 32 pixels, 2 lines, 5 buttons
Control panel interface:	RS 422 (Mini DIN 6 connection) for remote control maximum cable length: 10 m
Service interface:	RS232C, D-Sub 9
Sensor interfaces for external sensors	(opto-isolated; D-Sub 9 connector, each on a separate 4-pin M12 connector)
Label sensor:	Wenglor OPT242-P800 (adjustable by potentiometer) or alternate sensors or signals, PNP/NPN [3], 24 V
Product sensor:	PNP/NPN [3], 24 V
APSF-Sensor (Rotary encoder):	single-phase, PNP/ NPN [3]/ P-P, 24 V, max. 20 kHz
Outer diameter checking sensor:	PNP/NPN, 24 V

2.1 OVERVIEW

PLC outputs: (connection with D-Sub 15 connector, optional with 8-pin M12)	3x PNP, 24 V, max. 500 mA/channel, total permissible output current: 1500 mA
	One insulated relay output, max. 125 mA (NC/NO), functions parallel to the PNP outputs (selectable)
	Optional output via an 8-pin M12 connector

3) Selectable by jumper setting

Internal Interfaces

UART for RFID	none
Connector for add motor driver boards	none
Thermal print head connectors	none

Status messages, test functions

Automatic halt, if	... the label roll is spent or no gap was found. … the maximum allowable number of missing labels has been exceeded.
Test functions:	Automatic diagnostics check when switched on

Dimensions

Height x width x depth: [4)]	492 x 488 x 353 mm
Weight:	33 kg

4) Measurements without the dispensing plate bracket and dispensing plate

Environmental conditions

Operating temperature:	5 to 40 °C
Humidity:	30 to 85%, (non-condensing)
Noise level (at a distance of 1 m):	70 dB(A)
Protection class:	IP 21 IP 65 optional (with extras)

Integration

Mounting points:	side / bottom / rear
Labelling positions:	top / side / bottom
Dispensing edges:	V-shape
	L-shape; fixture 90° pivoting, for all L-shape types (4“ L-shape disp. edge: material width up to 100 mm only)

Certificates

– CE, TÜV/GS, FCC, CCC, GOST, NRTL, US/CA

– The *regulation DIN EN 55022* requires for class A devices the following text to be printed in the manual:

„WARNING: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.“

– The *FCC regulation* requires the following information text for class A products:

„NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense“

2.1.6 Design models

The ALS 104 Label Dispenser is available in two designs for differing conveyor belt directions.

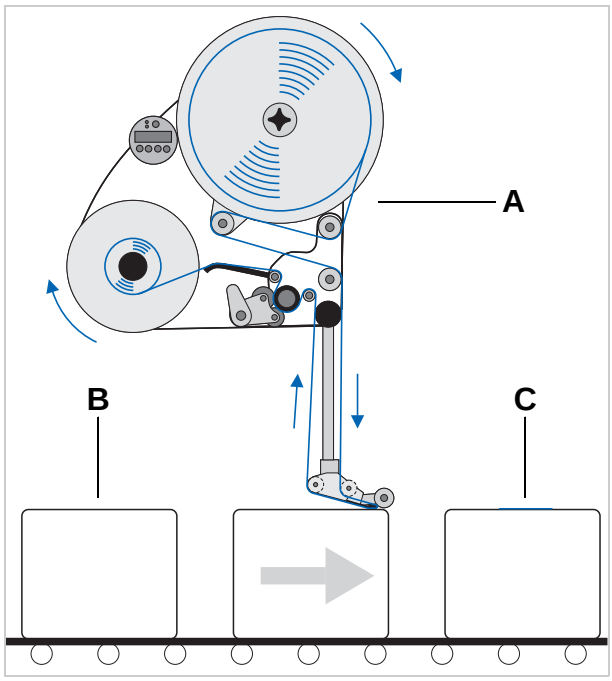
Right-handed version

– The products are transported from left to right [10].
– The dispensing edge is located on the right side.
– Abbreviation: RH

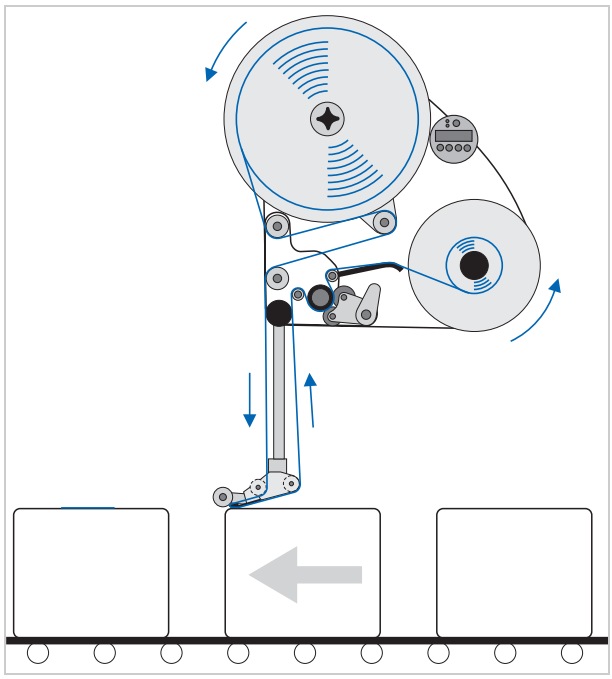
Left-handed version

– The products are transported from right to left [11].
– The dispensing edge is located on the left side.
– Abbreviation: LH

The label dispenser operation described in this manual is based on the right-handed version. The left-handed version is only taken into account if the explanations or figures of the designs differ significantly.



[10] Right-handed version
A ALS 104
B Product on the conveyor belt
C Labelled product



[11] Left-handed version

2.2 OPTIONS

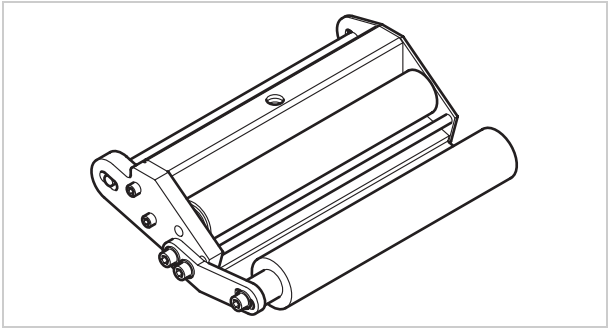
External control panel

– An external control panel can be connected in addition to the integrated control panel.
– An external control panel is useful if the standard control panel is inaccessible due to the position in which the unit is installed.

[12] External control panel

Fixed dispensing edge

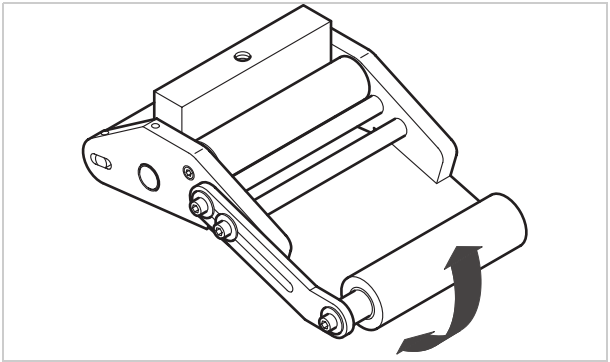
– The dispensing edge has a fixed connection to the brackets.
– To adjust the vertical position, lift/lower the entire device.
– The slope angle can be adjusted by rotating the brackets (see the service manual for further details).



[13] Standard dispensing edge

Swivelling dispensing edge

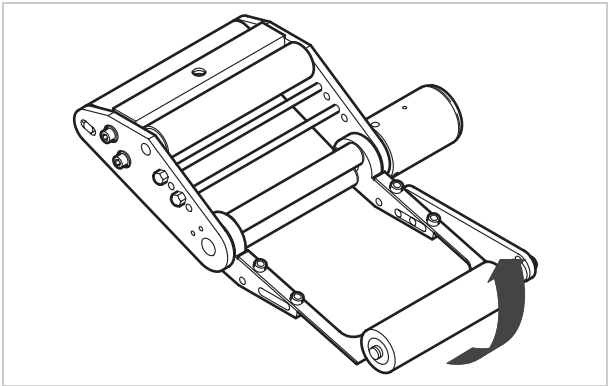
– The position of the dispensing edge can be adjusted vertically.
– The device need not be moved to adjust the position of the dispensing edge; the device's mounting need not be dismantled.



[14] Swivelling dispensing edge

Spring-loaded dispensing edge

– The dispensing edge is pivoted. A torsion spring in the dispensing head presses the dispensing edge downwards and onto the surface of the product.
– Allows compensation for height differences between the products or on the product surface.

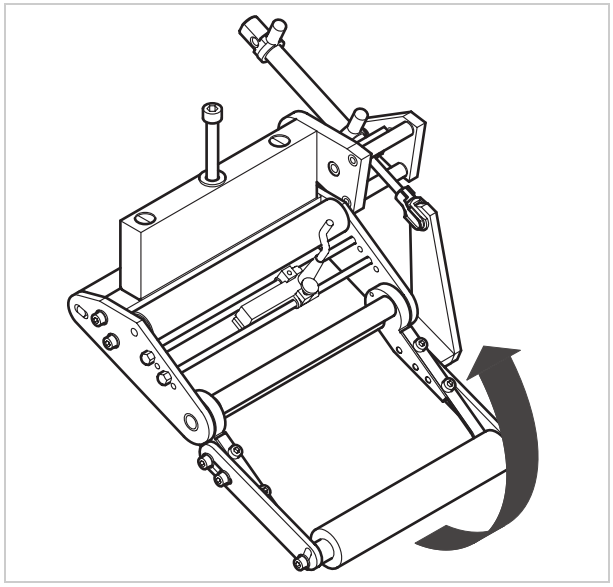


[15] Spring-loaded dispensing edge

2.2 OPTIONS

Pneumatic dispensing edge

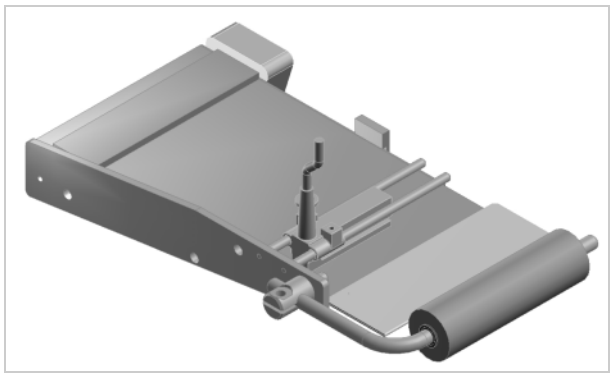
– The dispensing edge is pivoted in the dispensing head. Compressed air presses the dispensing edge onto the surface of the product.
– Allows compensation for height differences between the products or on the product surface.



[16] Pneumatic dispensing edge

V-shape dispensing edge

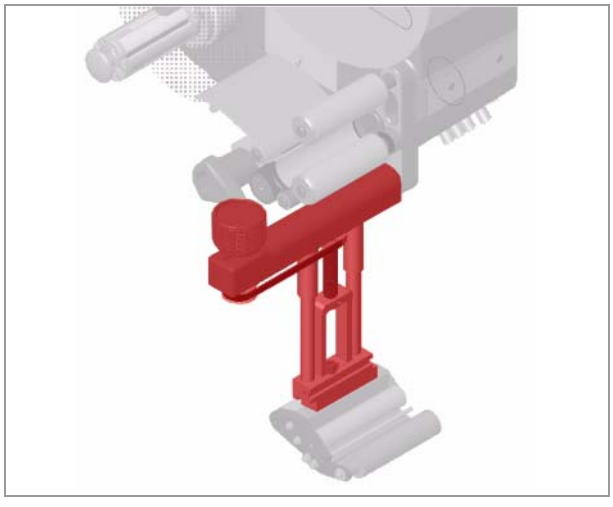
– An alternative for applications which do not leave enough space for the standard dispensing edge holder, which juts out to the bottom side.
– Is attached directly to the machine



[17] V-shape dispensing edge

Adjustable dispensing edge holder

Enables a vertical fine adjustment of the dispensing edge towards the product without moving the machine.

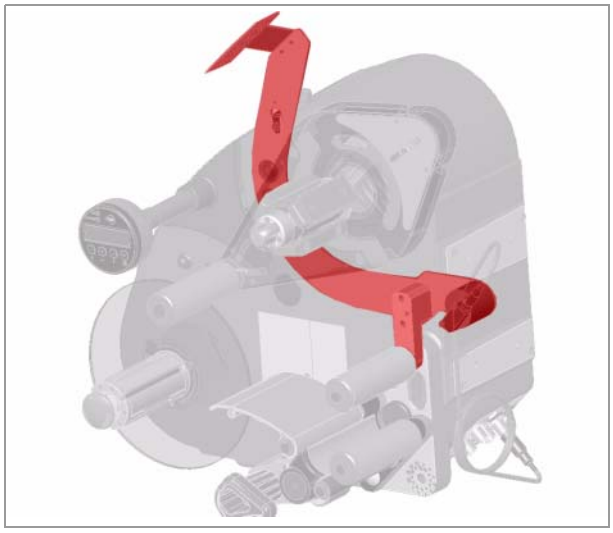


[18] Adjustable dispensing edge holder (pictured red resp. dark gray)

2.2 OPTIONS

Outer Diameter control sensor

The outer diameter control sensor (OD sensor) triggers a warning, if the label roll outer diameter falls below a certain, adjustable value.



[19] OD sensor (pictured red resp. dark gray)

Dust/Splash guard

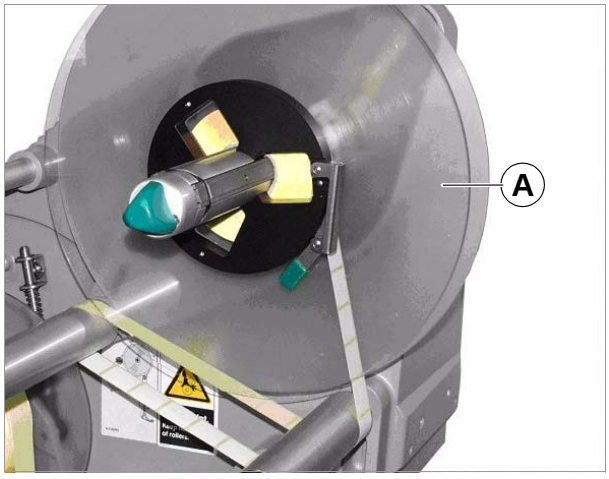
Available only for ALS 20X.

Additional sealing of the electrical connections and of the housing fulfils the requirements of the IP65 protection class [19].

[20] Dust/splash guard of the electrical connections (pictured red resp. dark gray)

Additional material guide disk

The additional material guide disk [21A] improves the lateral guiding of the material roll. This option is especially recommended, if very narrow material (< 30 mm width) is processed.



[21] Additional material guide disk (A)

2.2 OPTIONS

Printer

– If necessary, you can mount a hot stamp printer (not available from Avery Dennison) onto the holder brackets of the dispensing edge.
– Example of use: Printing consecutive numbers onto labels.

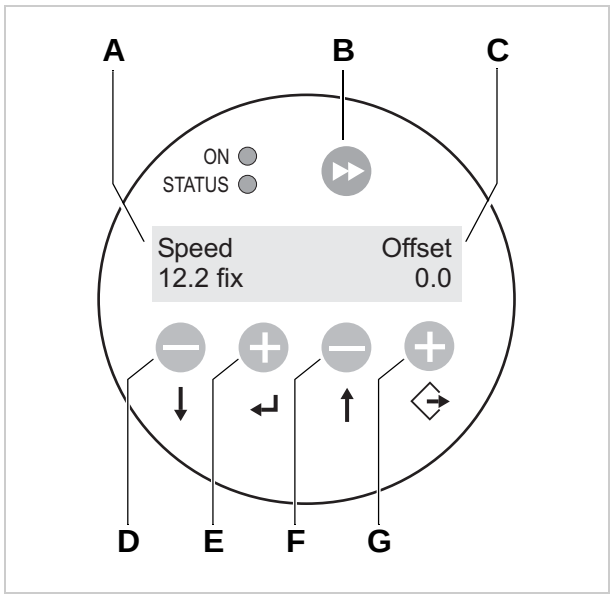
Narrow label spring kit

Narrow label material may under certain circumstances tear off or expand in a way which results in poor labelling precision. In those cases, it is adviseable to install weaker dancer arm springs.

2.3 OPERATING MODES

2.3.1 Dispensing mode

– This is the operating mode of the unit when switched on.
– The display shows the dispensing speed [22A] and the start offset [22C].
– In dispensing mode, the button assignments are as shown *on the buttons*.
– Both settings can be increased ('+' button) or lowered
('–'-button) during dispensing operation [22].
– For more information on adjusting the dispensing operation, see "Function menu settings" on page 38



[22] Control panel and button functions in dispensing mode.
A Dispensing speed display (here: 12.2 m/min)
B Dispense label button
C Start offset display (here: 0 mm)
D Button to lower dispensing speed
E Button to increase dispensing speed
F Button to lower start offset
G Button to increase start offset

Dispensing speed

– Setting range:
fix: [5.0…30.0] m/min
var: [0.0…30.0] m/min
– Display *fix*: The dispensing speed is constant.
– Display *var*: The dispensing speed adjusts to the speed of the conveyor belt ('speed adaption').

Start offset

– Setting range: [0.0…999.9] mm
– The start offset indicates the distance between the product sensor and the dispensing edge.

Dispensing manually

To manually trigger the dispensing of individual labels:
➔ Press the button .
– Dispensing speed: As specified in the setting (see above).

2.3 OPERATING MODES

2.3.2 Configuration mode

Switching to configuration mode:

➔ Press the buttons ↓ + ◇→.
– Display:

LABEL SETUP

– LABEL SETUP is the name of the first menu shown directly after switching to configuration mode.
– In configuration mode, the button assignments are as shown *below the buttons* [23D].

Function of the double-arrow button

To dispense individual labels:
➔ Press ▶▶ *button briefly* (less than two seconds).
– Dispensing speed: As specified in the configuration; 'Speed Adaption' is not active.

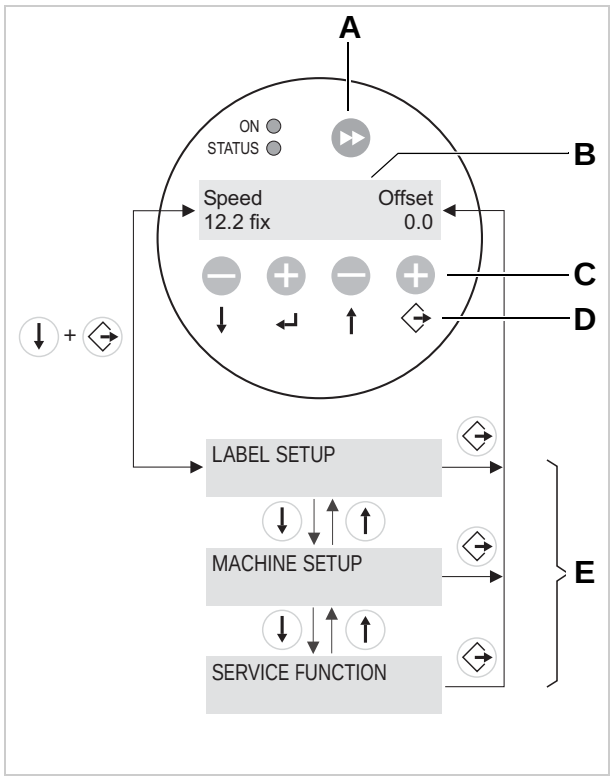
To automatically calibrate the label length:
➔ Hold down the button ▶▶ for a while (more than two seconds).
– Is equivalent to the function LABEL SETUP > Label Size.

Menus

In 'Configuration' mode, the user has access to several menus providing a fixed sequence of various functions that can be carried out.

In addition to the LABEL SETUP menu, there are also the menus MACHINE SETUP and SERVICE FUNCTION.

Figure [23] shows the button functions for switching between individual menus and for leaving the configuration mode.



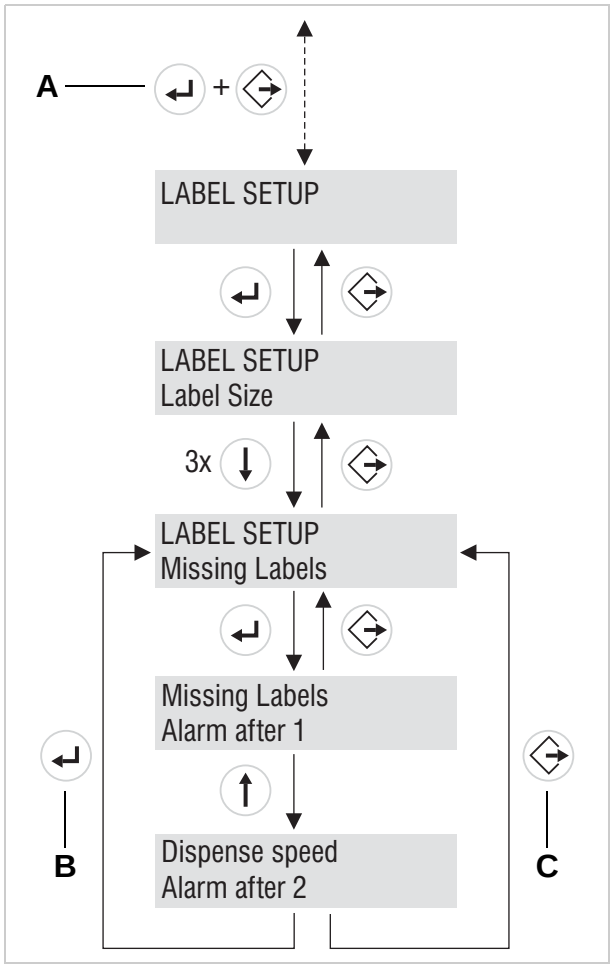
[23] Control panel and button functions in configuration mode.
A Button for triggering a dispensing procedure and for starting the measurement of lengths.
B Display in dispensing mode
C Explanation of buttons in dispensing mode
D Explanation of buttons in configuration mode
E Display indicators in configuration mode

2.3 OPERATING MODES

Functions

Every submenu contains functions for setting the unit controls.

Figure [24] shows the buttons functions for changing the configuration with the example of LABEL SETUP > Missing Labels.



[24] Button functions when using the LABEL SETUP > Missing Labels function.
A Button combination for 'Switching between configuration and dispensing mode'
B Button to 'Accept changes'
C Button to 'Cancel changes'

2.3.3 Function overview

Menus:	LABEL SETUP	MACHINE SETUP	SERVICE FUNCTION [1)]
Functions:	Label Size	Factory Settings	Run continuously
	Stop Sensor Pos.	Speed Adaption	Machine Type
	Product Length	Encoder Resol.	
	Missing Labels	Encoder Diameter	

1) The functions in the SERVICE FUNCTIONS menu are password protected.

[25] Overview of the menus and functions.

2.3.4 Function descriptions

LABEL SETUP menu

Function **Label Size**
- Automatically calibrates the label length
- Display:

  Current Size:
  107.7 mm Detect?
- Press ↵ in order to start the calibration; four labels are dispensed during the calibration.
- Display after the calibration:

  Size found:
  107.7 mm Accept?
- ↵ Press to accept the measured value,
  ◇ to quit the function and retain the former value.

Function **Stop Sensor Pos.**:
- Stop sensor position
- Distance between the label sensor (stop sensor) and the dispensing edge
- This setting determines how far out the labels protrude over the dispensing edge when the unit is in its waiting position.
- Setting range: [0.0…999.9] mm

Function **Product Length**:
- Product length
- Prevents the product sensor from being incorrectly activated. Once a product has triggered the sensor, the sensor is locked until the product has passed under the sensor.
- Setting range: [0.0…999.9] mm

Function **Missing Labels***:*
- Missing labels
- In practice, sometimes labels are missing from the backing paper. The fault tolerance is defined using the Missing Labels function.
- Set the number of missing labels that must be detected before an error message is triggered.
- Setting range: [1…10]

MACHINE SETUP menu

Function **Factory Settings**
- Restores factory settings

Function **Speed Adaption**
- Settings: On/Off
- On: The dispensing speed is automatically adjusted to the speed of the conveyor belt; this setting only functions if a rotary encoder is connected.
- Off: The dispensing speed is constant and is as set in dispensing mode (see section “Dispensing mode” on page 24.)

Function **Encoder Resol.**
- Determines the resolution of the rotary encoder.
- Setting range: [10…9999] pulse/revolutions

Function **Encoder Diameter**
- Determines the diameter of the measuring wheel installed with the rotary encoder.
- Setting range: [3.2…318.3] mm
- Display:

  Encoder Diameter
  x.x yy.y var
- The right side (yy.y) shows the speed of the conveyor belt currently measured. By changing the measuring wheel diameter, this value can be adjusted to the actual conveyor speed.

SERVICE FUNCTION menu

EXPERTS

Function **Run continuously**
- A test function that turns on the motor
- To stop motor: Any button

EXPERTS

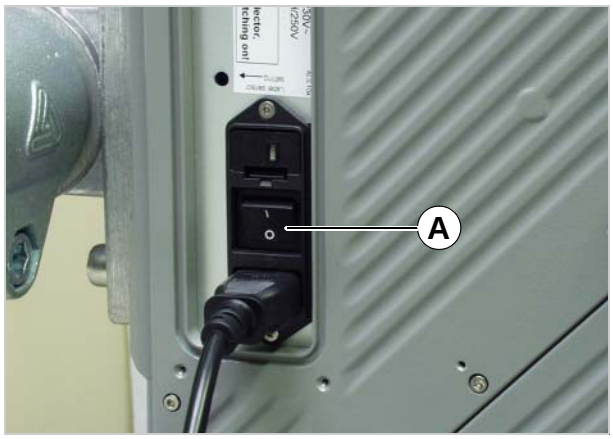
Function **Machine Type**
- *ALS 104 LH*: Left-handed unit
- *ALS 104 RH*: Right-handed unit

2.4 INSERTING LABEL MATERIAL

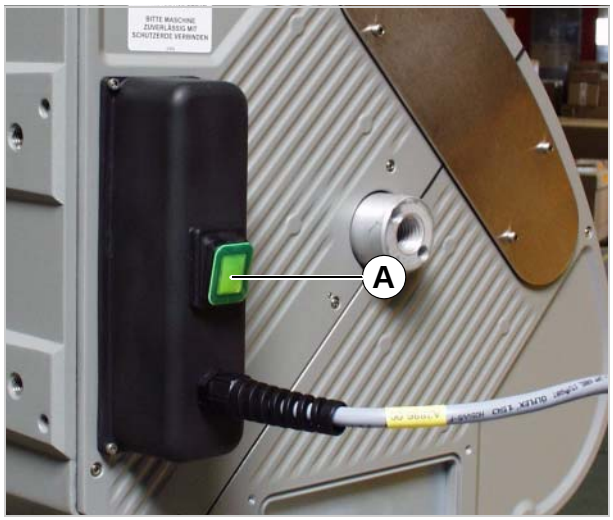
2.4.1 Prerequisites

The label dispenser is turned off at the main switch
– Standard machine: switch set to “O” [26A]
– Machine with dust/splash guard: switch does *not* light [27A]

➔ Check that the safety installations are working properly.
➔ Inspect the machinery for any visible damage. Report any ascertained defects immediately.
➔ Remove any unnecessary materials and objects from the operating area of the unit.
➔ Ensure that only authorised persons are within the operating range of the machine.
➔ Use the required personal protective equipment correctly; forexample, wear a hairnet, safety glasses.



[26] Main switch (A) on the housing.



[27] Main switch on ALS 104 with dust/splash guard option.

2.4 INSERTING LABEL MATERIAL

2.4.2 Inserting a label roll

WARNING!

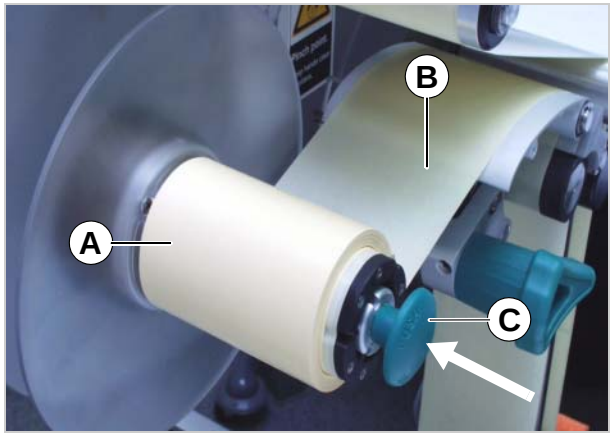
Risk of injury due to moving and rapidly rotating parts!

- ➔ **Before inserting the label roll, ensure that the device is turned off at the main switch.**
- ➔ **Do not under any circumstances turn the device on before the label strip is threaded in completely.**

Removing spent backing paper

Assuming backing paper has gathered on the rewinder [28A] :

- ➔ Press the release button [28C].
- – The tensioning mechanism of the rewinder is slackened.
- ➔ Remove the rewound backing paper.



[28] **A** Rewound backing paper
B Backing paper path
C Release button

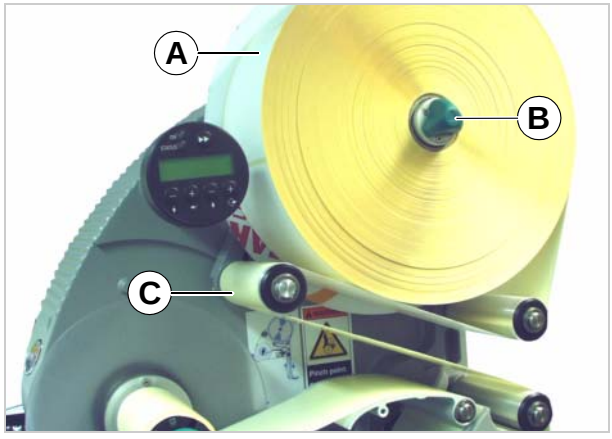
Removing glue residue

- ➔ If necessary, clean the following components:
- – Dispensing plate
- – Deflection rollers
- – Drive rollers
- – Pressure roller

- ➔ Follow the directions provided in section “Maintenance and cleaning” on page 42.

Inserting a new label roll

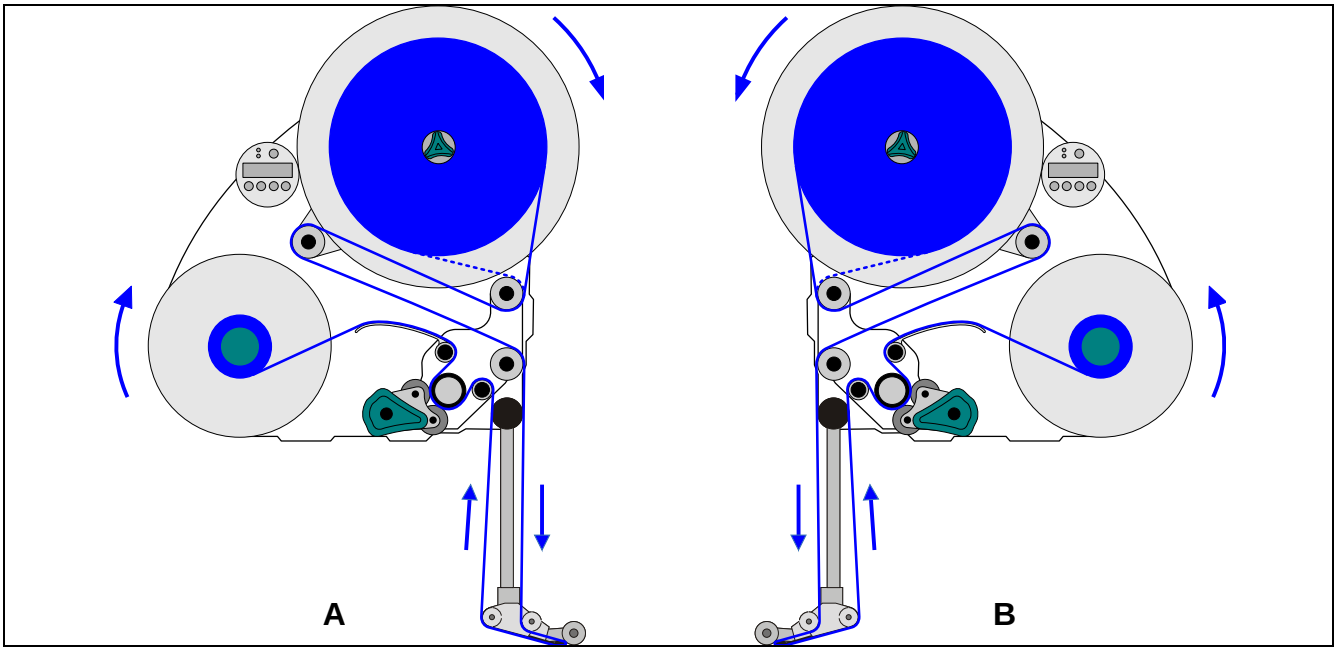
- ➔ Push the material roll [29A] onto the unwinder as far as it will go.
- ➔ Rotate the rotary knob [29B] in a clockwise direction until the label roll sits tightly.
- ➔ Run the label strip around the dancer arm as shown in the figure [29C].
- – The material strip must run in a slightly different route when using label rolls with a ‘labels facing inwards’ winding direction. Insert the roll in such a way that it unwinds in an anticlockwise direction (see “Threading guide” on page 30).



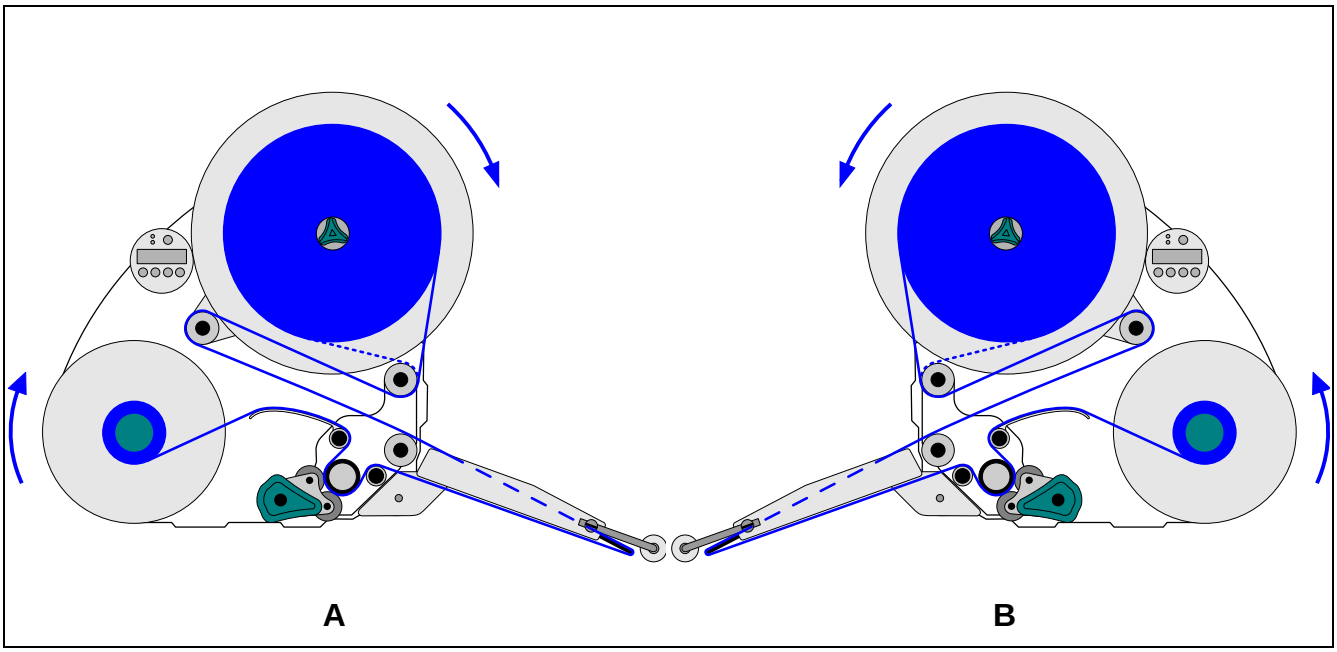
[29] Fasten the label roll to the dispenser (the winding direction of the roll should be with the labels facing outwards).

2.4.3 Threading the label web

Threading guide



[30] Threading guide for ALS 104 with L-shape dispensing edge *.
A Right-handed version **B** Left-handed version



[31] Threading guide for ALS 104 with V-shape dispensing edge *.
A Right-handed version **B** Left-handed version

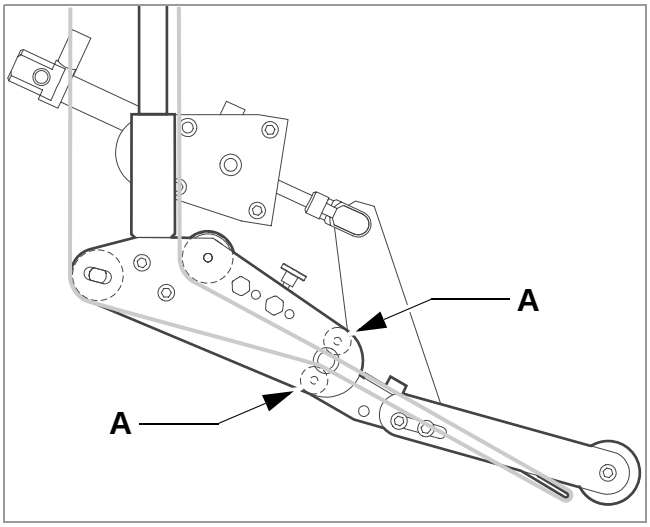
*) Solid line: Path for label rolls with labels facing outwards. Dottet line: differing path for label rolls with labels facing inwards.

2.4 INSERTING LABEL MATERIAL

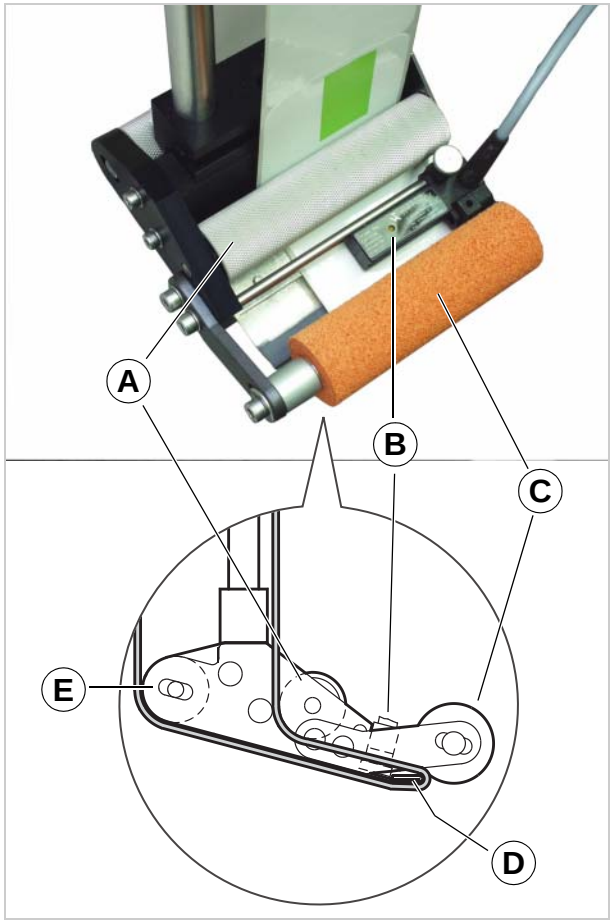
Threading the label roll at the dispensing edge

➔ Unroll around 1 m of label strip and remove the labels from it.
➔ Pass the backing paper around the first deflection roller [32A] and through the slot in the sensor [32B].
➔ Feed the backing paper under the pressure roller [32C] to the dispensing plate [32D].
➔ Feed the backing paper around the dispensing plate to the second deflection roller [32E].

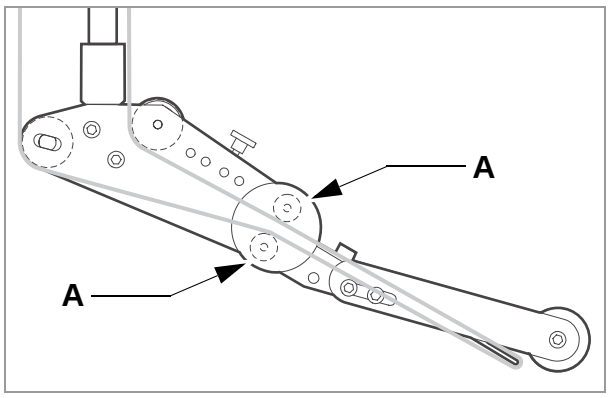
Spring loaded [33] and pneumatic [34] L-Shape dispensing edges:
➔ Additionally pass the backing paper between the two slim deflection rollers at the joint [33A] [34A].



[34] Path of the label strip at the pneumatic dispensing edge (option).



[32] Path of the label strip near the edge of the dispenser.
A 1st deflection roller
B Label sensor
C Pressure roller
D Dispensing plate
E 2nd deflection roller

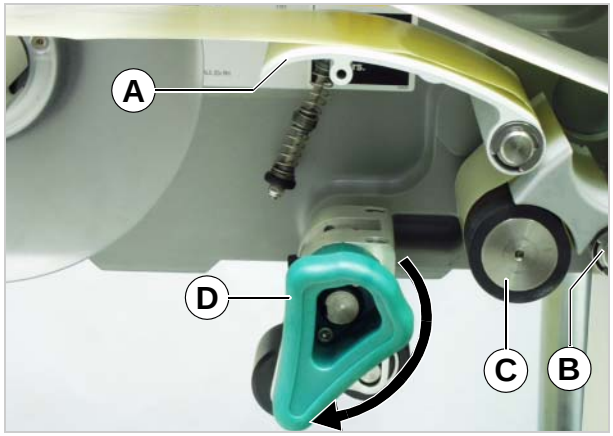


[33] Path of the label strip at the spring loaded dispensing edge (option).

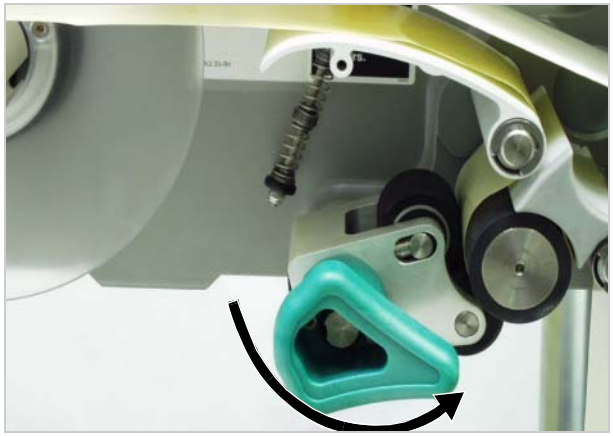
2.4 INSERTING LABEL MATERIAL

Threading the label roll onto the drive roller

➔ Open the pressure roller. To do so, rotate the lever [35D] in a clockwise direction.
➔ Feed the backing paper around the deflection roller [35B], drive roller [35C] and the tensioning plate [35A].
➔ Close the pressure roller. To do so, rotate the lever anticlockwise until it snaps in noticeably.



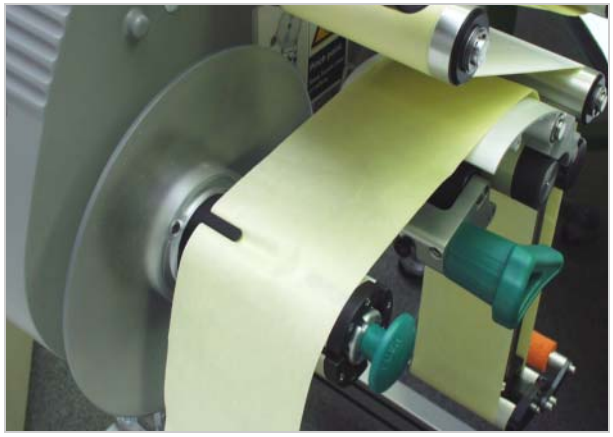
[35] Opening the pressure roller.



[36] Closing the pressure roller.

Fastening the label roll to the rewinder

➔ Clamp the backing paper to the rewinder as shown and tighten it [37].



[37] Fastening the backing paper to the rewinder.

3.1 ELECTRICAL CONNECTIONS

3.1.1 Power supply standard machine

WARNING!

This machine operates using mains voltage! Touching live electrical parts may expose you to hazardous electrical currents and may lead to burns.

- ➔ **Make sure that the unit is switched off before connecting the power cable.**
- ➔ **Only operate the unit with mains voltage set in the fuse insert.**
- ➔ **Ensure that the unit is set to receive the mains voltage supplied by your electricity provider.**
- ➔ **Only connect the unit to a grounded power socket fitted to authorised standards.**
- ➔ **The power cable should not be more than 3 m long.**

The device is *only* completely *disconnected from the mains if the power cable*is unplugged. Therefore:

- ➔ **Make sure the power supply socket is accessible.**
- ➔ **In case of emergency, switch off the device and disconnect the power cable!**

Checking the power supply setting

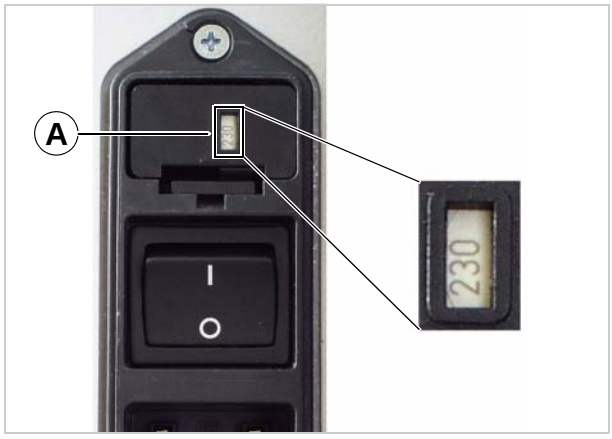
The ALS 104 is suitable for operation with a power supply of 230 V (AC) or 115 V (AC).

EXPERTS If you are unsure of what mains voltage your local electricity supplier provides, refer to a qualified service technician.

➔ Check whether the right voltage is set in the display of the fuse insert [38A].

EXPERTS Only a qualified service technician is allowed to change the power supply setting.

You can find further information for performing this operation in the service manual.

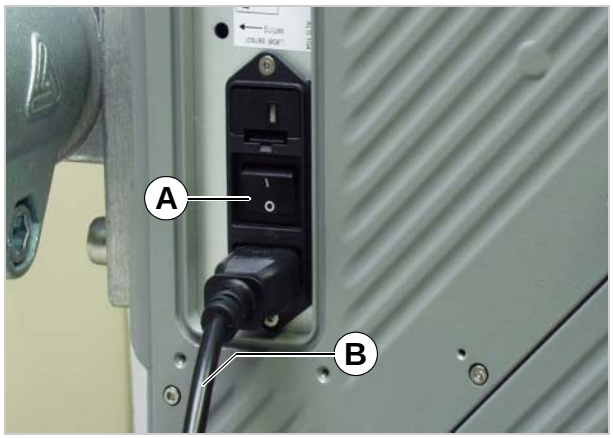


[38] Voltage display on the fuse insert (showing 230 V here).

3.1 ELECTRICAL CONNECTIONS

Connecting the power cable.

➔ Ensure that power switch [39A] is set to “O” (off).
➔ Using the supplied power cable, plug the ALS 104 into a socket connected to the mains supply.



[39] Power cable (B) plugged in.

3.1.2 Power supply with dust/splash guard option

EXPERTS

ALS 104 labeller with dust/splash guard option (IP65) may only be connected by qualified service technicians.

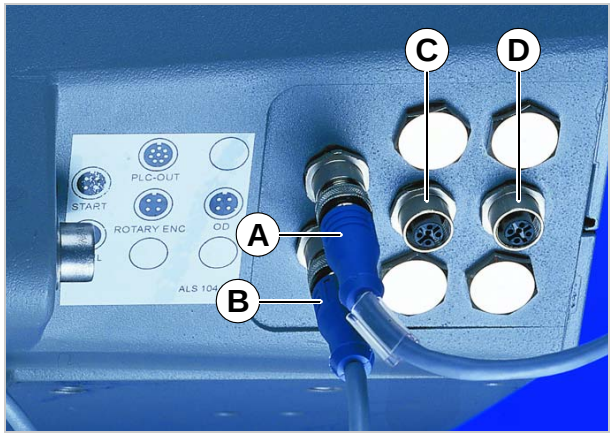
3.1.3 Connecting sensors

➔ Check whether the required sensors are connected [40] before turning on the ALS 104.

The minimum required sensors:
– Label sensor (installation location: dispensing edge)
– Product sensor (installation location: conveyor belt)

You have the option of fitting additional sensors as well:
– Speed sensor (required for speed adaption)
– Outer diameter checking sensor (provides advance warning of the end of a label roll)

You can find further information regarding suitable sensor types, pin assignments, and the like in the service manual.



[40] Sensor connectors:
A Product sensor
B Label sensor
C Optional: Speed sensor
D Optional: Roll diameter (RD) sensor

3.2 MECHANICAL SETTINGS

3.2.1 Adjusting the unwinder's core diameter

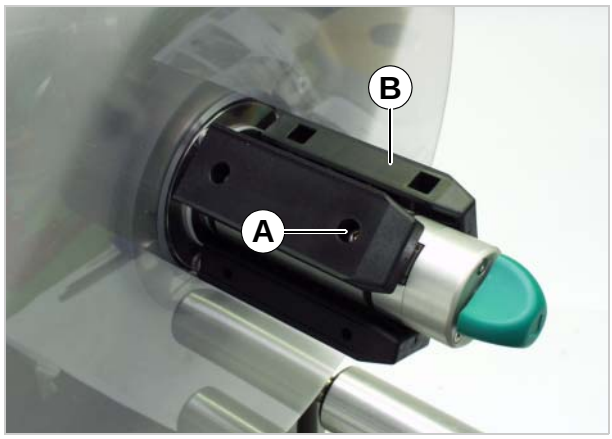
Tool:
– 3 mm hexagon (Allen) screwdriver

The unwinder can be adjusted with core adapters [41B] to fit the inner diameter of the label roll. The adapters must be fitted and dismantled in different ways depending on this diameter:

– 38.1 mm (1") core
➔ Unscrew the screws [41A] (3 for each adapter) and remove the adapters.

– 76.2 mm (3") core
➔ Screw on the adapters, as is shown in Figure [41].

– 101.6 mm (4") core
➔ Screw on the adapters, as is shown in Figure [42].

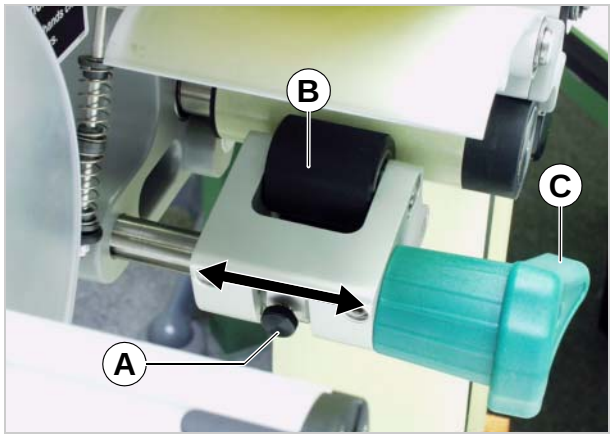


[41] Core adapter position for a core diameter of 76.2 mm.

[42] Core adapter position for a core diameter of 101.6 mm.

3.2.2 Positioning the pressure roller

➔ Open the pressure roller [43B]. To do so, rotate the lever [43C] in a clockwise direction until the roller snaps up.
➔ Release thumb screw [43A].
➔ Align the pressure roller over the backing paper so that it is centred.
➔ Close the pressure roller.
➔ Screw the thumb screw tight.



[43] Setting the position of the pressure roller (B).

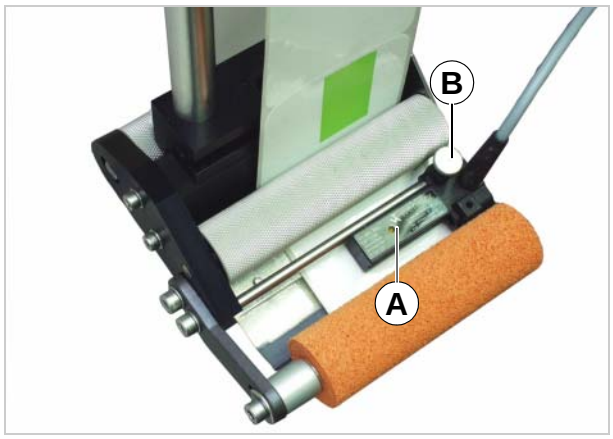
3.2.3 Calibrating the label sensor

Positioning the sensor:
➔ Release the thumb screw.
➔ Position the sensor along the axle in such a way as to allow it to register the spaces between the labels.

Configuring the sensor:
– The settings required for the sensor depend on the employed materials. The standard settings are suitable for many types of label materials.
➔ Check whether the LED is lit [44A] when the sensor is above a space between labels.
– If this is not the case, the sensor must be configured.

➔ You should refer to a qualified technician to help configure the sensor.

EXPERTS – Configuration instructions: See the service manual.



[44] Label sensor from Wenglor, model OPT242-P800

3.2.4 Setting the dancer arm restoring force

The unwinder dancer arm is preset in a way, that a wide range of label materials can be processed whithout having to change the dancer arms restoring force.

Even so, very narrow label material can under certain circumstances tear off or expand in a way which results in poor labelling precision. In those cases, the restoring force must be decreased.

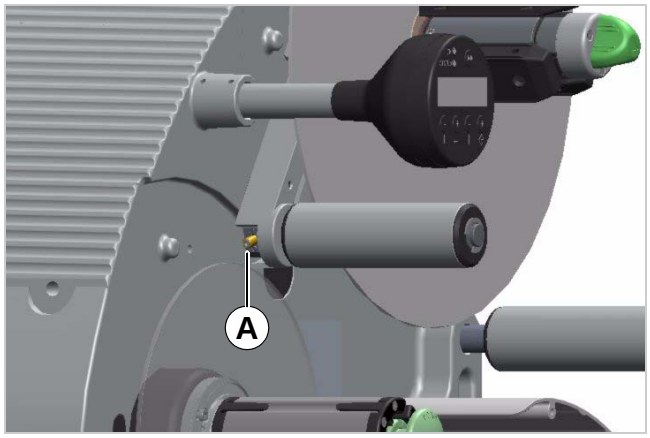
Tool:
2.5 mm hex socket screwdriver

➔ Turn the adjusting screw [45A] on the dancer arm *left* to *increase* restoring force.
➔ Turn the adjusting screw [45A] on the dancer arm *right* to *decrease* restoring force.

EXPERTS A service technician can restore the factory setting, see service manual chap. 6.2.3 section „Adjusting restoring force of dancer arm“.

If the problem still occurs, although the restoring force is already set to a minimum, there is the option of building in some weaker springs.

EXPERTS The springs must be built in by a qualified service technician. Instructions can be found in the service manual, chap. 6.2.3 section „Narrow label kit“.



[45] Setting screw (A) at the unwinder dancer arm.

4.1 START-UP AND SHUTDOWN

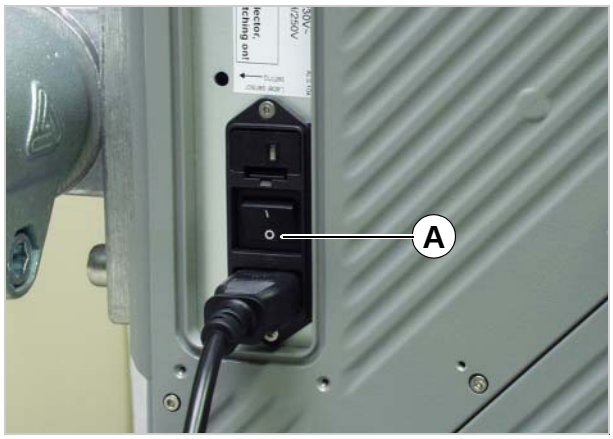
4.1.1 Turning on the unit

➔ Set the main switch [46A] of the unit to ‘I’ (On).

Machine with dust/splash guard option:
– The main switch [47A] lights, if the machine is switched on.

➔ Operate the main switch.

– Once on, the ALS 104 is in dispensing mode; in other words, triggering the product sensor will cause a label to be dispensed.
– More information on the dispensing mode can be found in the section “Dispensing mode” on page 24.



[46] Main switch (A) of ALS 104.

[47] Mains switch (A) of ALS 104 with dust/splash guard option.

4.1.2 Starting label dispensing

Dispensing with a product sensor

Once switched on, the ALS 104 is in dispensing mode; this means that triggering the product sensor will cause a label to be dispensed.

Prerequisites:
– The label length must be specified
– The product sensor must be connected

EXPERTS
– The sensor type (PNP/NPN) must be properly set.

Dispensing without a product sensor

It is also possible to trigger the dispensing process without a product sensor:

➔ Press the key ▶▶ briefly.

4.1.3 Stopping the dispensing process

➔ Set the main switch [46A] of the unit to ‘O’ (Off).

4.2.1 Function menu settings

Label length

The label length is calibrated automatically.

Prerequisites:
– Label material is inserted

➔ Call up the function LABEL SETUP > Label Size:

Current Size:
0.0 mm Detect?

➔ Press the key ↵ to start the calibration. ALS 104 then dispenses four labels in order to determine their length:

Size Found:
107.7 mm Accept?

➔ Press the key ↵ to accept the calibrated value, or press ◇ to retain the old value.

Label stop position

Prerequisites:
– The label length must be specified

The next label to be dispensed is halted in the label stop position. This is useful if the label protrudes over the dispensing edge somewhat [48].

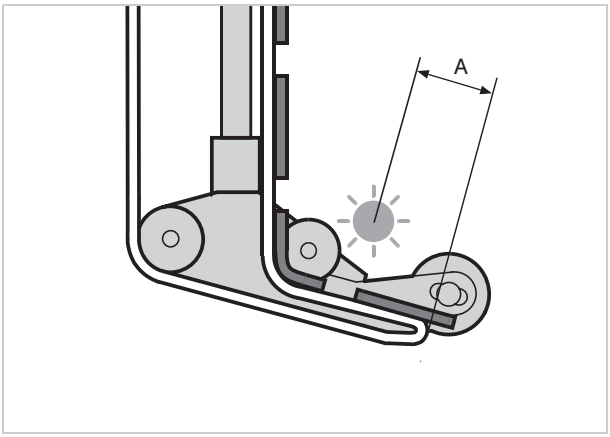
ALS 104 is pre-configured for use with the supplied label sensor. If this sensor is employed, the label stop position setting will only require minimal correction.

Correcting the default setting:
➔ Call up LABEL SETUP > Stop sensor pos..
➔ Increase the value to increase the overhang or lower the value to reduce the overhang.

The value ‘0’ will cause the label to stop directly with its front edge under the label sensor.

The front edge of the label to be dispensed should be flush with the dispensing edge:
➔ Enter the distance [48A] between the label sensor and the dispensing edge.

The front edge of the label to be dispensed should overhang:
➔ Add the length of the overhang to the distance between the label sensor and the dispensing edge.



[48] Label stop position (A)

4.2 CONFIGURATION AND MONITORING

Dispensing speed

The dispensing speed can be set to a fixed value or can be configured to automatically adjust to the speed of the conveyor belt (speed adaption). The second possibility requires a speed sensor to be connected; it measures and relays the conveyor speed to the dispenser.

Configuring a *fixed value*:

➔ Set the speed in dispensing mode with the two left keys (see “Dispensing mode” on page 24).

Configuring *speed adaption*:

➔ Turn the function on by setting MACHINE SETUP > Speed Adaption to ‘On’.

EXPERTS

➔ MACHINE SETUP > Encoder Resol. and MACHINE SETUP > Encoder Diameter set as appropriate for the employed speed sensor.

– See the service manual for information on suitable speed sensors.

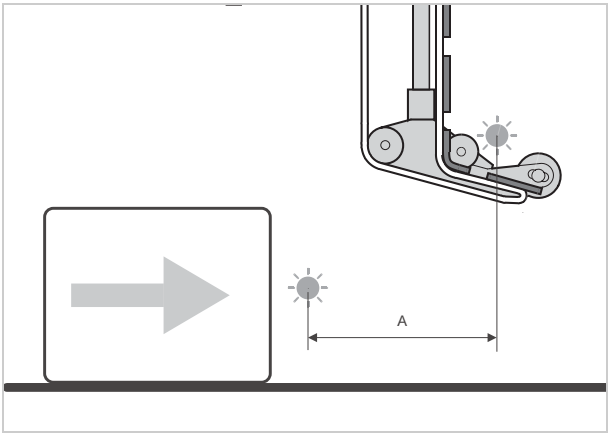
4.2 CONFIGURATION AND MONITORING

Label position on the product

Prerequisites:
– The label length must be specified.
– The label stop position must be set.

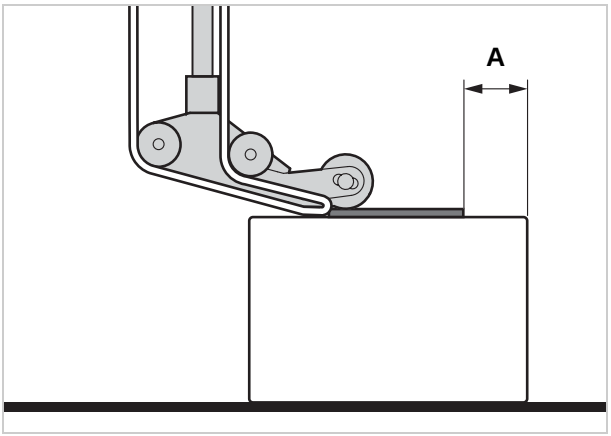
The *Start Offset* is set in dispensing mode with the right two keys (see “Dispensing mode” on page 24).

– The label should be flush with the front edge of the product:
➔ Enter the distance between the product sensor and the label sensor [49A].



[49] Distance between the product sensor (left) and the label sensor (right).

– The label should stop at a distance from the front edge of the product:
➔ Increase the start offset [50A] to increase the distance to the product’s front edge.



[50] Distance (A) between the label and the product’s front

4.2.2 Monitoring functions

While in dispensing mode, an electronic control monitors the following functions:

Missing labels

A label missing from the label roll does not normally affect the dispensing operation, because the label feed continues until a label's edge passes under the label sensor.

Nonetheless, it can be important that missing labels are reported. By configuring the function LABEL SETUP >Missing Labels, you can specify whether an error message is triggered after one or several missing labels.

Recognising the end of the label roll in advance

If the end of the label roll is to be recognised prior to the last label being dispensed, it is recommended that a sensor is used to check the outer diameter of the roll.

This sensor, which is available as an extra, is mounted on the unit in such a way as to trigger an error message as soon as the roll's diameter falls short of a specified value. This diameter can be configured.

5.1 MAINTENANCE AND CLEANING

5.1.1 Changing fuses

WARNING!

The machine operates using mains voltage! Touching live electrical parts may expose you to hazardous electrical currents and may lead to burns.

➔ **Make sure that the machine is switched off and the power cable is unplugged before removing the fuse insert.**

CAUTION!

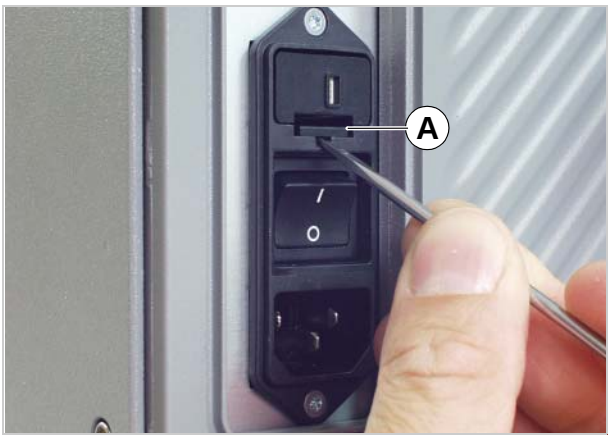
Risk of fire, if a wrong fuse type is inserted.

➔ **Only replace fuses with the type and rating specified in this manual.**

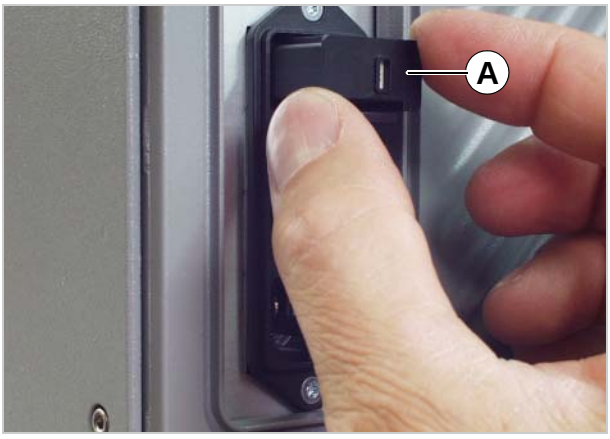
EXPERTS

ALS 104 with dust/splash guard: Fuses may only be replaced by qualified service technicians.

➔ Turn off the unit. Unplug the power cable.
➔ Remove the fuse insert. To do this, press the latch upwards [51A] and pull out the insert [52A].
– The fuse insert is located directly above the On/Off switch.



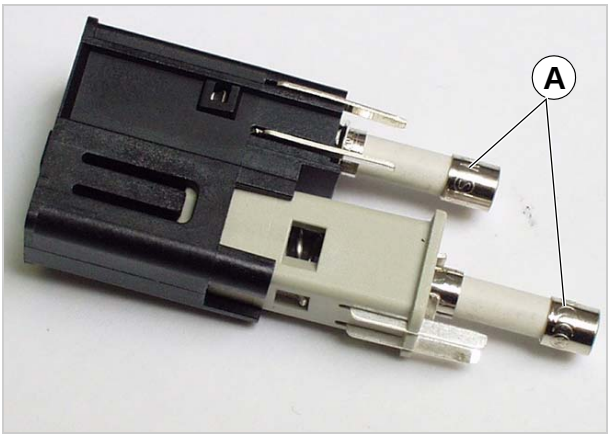
[51] Unlock the fuse insert.



[52] Remove the fuse insert (A).

➔ Take the fuses out of the fuse insert.
➔ Replace defective fuses.

Required fuse type:
– 2x F5AH / 250 V
– The same fuse type is required for 230 V as for 115 V.
– The fuses must conform to IEC 60127-2/5 (for example, “Wickmann 181 Series”)



[53] Remove (A) fuses.

5.1 MAINTENANCE AND CLEANING

5.1.2 Cleaning agents

Cleaning agents for rubber rollers:
– Roller cleaner, order number 98925.
  If other cleaning agents are used, there is a chance the rubber may corrode.

Cleaning agents for metal deflection rollers:
– Cleaning solvent, alcohol-based solvent, isopropyl alcohol**,** spray for removing labels

Cleaning the unit's housing:
– Commercially available neutral cleaning liquid

WARNING!

Cleaning solvent, alcohol-based solvent and isopropyl alcohol are highly inflammable!

➔ **Keep the cleaning agents, as well as any used cleaning cloths, away from open flames and other sources of ignition.**
➔ **Do not smoke.**
➔ **Observe the safety instructions on the container.**

CAUTION!

Unsuitable cleaning agents can cause considerable damage to the unit!

➔ **Do not use any cleaning agent that could damage or destroy the resin surface, labelling, display, nameplates, electrical components, etc. Observe the instructions of the cleaning agent manufacturer.**
➔ **Do not use any abrasive or plastic-corroding cleaning agents.**
➔ **Do not use any acidic or alkaline solutions.**

5.1.3 Regular maintenance

The label dispenser is designed to be maintenance-free. However, you should service the unit regularly in order to ensure reliable long-term operating results.

Depending on operating conditions, you should perform the following at least on a weekly basis:
➔ The cleaning and maintenance work described below.

Removing paper debris

➔ Wipe the paper residue from the rollers and edges.
➔ Clean the sensor lenses with a soft brush or cloth.

6.1 ERROR MESSAGES

6
6.1

6.1.1 Error messaging

Error messages are displayed as follows:

```
xxxxxxxxxxxxxxxx
Reset Alarm?
```

xxxxxxxxxxxxxxxx = Message text

At the same time, a signal is activated at the signal output of the unit, which can be used to switch on an external visual or audible signal.

➔ Press the key ↵ to reset the error message.

Before considering applying any remedies, check whether the message appears repeatedly:

➔ Turn off the unit and switch it on again after 10 seconds.
– It is important to wait at least 10 seconds before switching the unit back on again.

6.1.2 List of error messages

No.	Message text	Possible cause	Remedy
1	General Alarm	– Motor failure – Motherboard malfunction	➔ Request a service technician
3	Missing Label	– Max. number of missing label was exceeded	➔ Check the label material
4	Material Low	Without a connected roll diameter check: – The product sensor may have been mistakenly connected to the socket for the roll diameter check. – Internal sensor connection cables may be mixed up.	➔ Connect the product sensor to the correct socket. ➔ Request a service technician.
		With a connected roll diameter check: – The material roll has fallen short of the critical diameter.	➔ Prepare to change the material roll.
5	Unknown Length	The function LABEL SETUP > Label Size was cancelled unsuccessfully. – No label material inserted. – Electronic fault.	 ➔ Insert label material. ➔ Request a service technician.

[54] Overview of numbered error messages.

7 APPENDIX

7.1 EC DECLARATION OF CONFORMITY

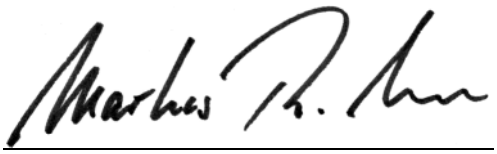
We,

Avery Dennison Deutschland GmbH
Ohmstrasse 3
85386 Eching, Germany

herewith assert that we have designed and built the device described in the following to conform with the basic safety and health requirements of the relevant EU directives.

Name of the device:	ALS 104
Device type:	Label dispenser
Serial number:	Consists of a sequential number (five-digit) + date code (YYMM) + ending (device name): –ALS104 (Example: 040060309–ALS104)
Relevant EU directives:	2004/108/EC (EMC Directive) 2006/95/EC (Low Voltage Directive)
Other applicable, harmonised norms, in particular:	EN 60 950-1/A11:2004 (Information technology equipment safety) EN 55 022:2006 class A (Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement) EN 61000–6-2: 2005 (Immunity standard for industrial environments) EN 61000-3-2: 2006 (Limits for harmonic current emissions) EN 61000-3-3/A2:2005 (Limitation of voltage changes, voltage fluctuations and flicker)
Year of first CE marking:	2006

Eching, 19. March 2009



Markus Roderer (General Manager)

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